L1970450003 – Will
Carlstrom Landfill
ILD 980497721
SF/HRS

CERCLA

Expanded Site Inspection

Illinois Environmental
Protection Agency

CERCLA
EXPANDED SITE INSPECTION REPORT

for:

Carlstrom Landfill

639 Rock Island Avenue
Rockdale, Will County, Illinois

ILD#: 980497721

PREPARED BY:
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
BUREAU OF LAND
DIVISION OF REMEDIATION MANAGEMENT
OFFICE OF SITE EVALUATION

September 9, 2004

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SECTION 1.0 INTRODUCTION

1.1 Introduction

On October 18, 2003 the Illinois Environmental Protection Agency's (IEPA)'s Office of Site Evaluation was tasked by the United States Environmental Protection Agency (U. S. EPA) to conduct a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Expanded Site Inspection (ESI) investigation of the Carlstrom Landfill (ILD 980497721) site located at 639 Rock Island Avenue in Rockdale, Will county, Illinois. The ESI is performed under the authority of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) commonly known as Superfund.

The objective of an Expanded Site Inspection (ESI) is to collect all data necessary to prepare a Hazard Ranking System (HRS) scoring package to propose the site to the National Priorities List (NPL). To fully evaluate the site and fulfill HRS documentation requirements, the ESI should:

1) Investigate and document critical hypotheses or assumptions not completely tested during previous investigations;
2) Collect samples to attribute hazardous substances to site operations;
3) Collect samples to establish representative background levels;
4) Collect any other missing HRS data for pathways of concern.

SECTION 2.0 SITE BACKGROUND

2.1 Site Description

The Carlstrom Landfill site is located at 639 Rock Island Avenue in Rockdale, Will county, Illinois. The landfill property was permitted by IEPA in 1973 and consists of approximately 9.2 acres and is legally described as being located in the Northeast Quarter of the Southwest Quarter of the Southwest Quarter of section16, T. 35N., R. 10E.
The property is bordered by Interstate 80 on the northeast side; by CRI & P railroad tracks, Route 6 and the Des Plaines river on the southeast; by vacant land on the southwest, and Raynor Avenue on the northwest. There is a private residence located adjacent to the northeast side of the property and other residences located approximately 600 feet north across Interstate 80 and approximately 700 feet west across Raynor Avenue. Commercial businesses are located approximately 300 feet southeast across Route 6. The Des Plaines River is located adjacent to these businesses and lies approximately 500 feet southeast of the property.

Access to the property is via Rock Island Avenue, which dead ends at the east side of the property. The property consists of a former limestone quarry that was filled in with landfill wastes and the land filled surface is elevated with steep sides but is relatively flat on top. The property is fenced and located in a remote area but there are gaps in the fence where off road vehicles have entered and put ruts in some areas of the landfill. There are no workers onsite.

Although the Des Plains River lies approximately 500 feet southeast of the site there is no direct flow across the railroad tracks and Route 6 into the river. Some of the

drainage from Raynor Avenue and the I-80 access ramp on the northwest and north side of the property flows into old culverts that direct some highway runoff along the northwest to northeast perimeter of the property. During rain this runoff follows along the north side of Rock Island Avenue until it meets the point where drainage from Carlstrom Landfill mixes with it and both exit the site. Drainage then flows across Rock Island Ave. into a gravel ditch along the north side of the CRI & P railroad tracks. The drainage flows southwest for approximately 3,400 feet where it enters into Thorne Creek (which at this point is an open concrete trough locally called Brandon Creek) along the east side of Brandon Road. It then flows south approximately 650 feet to Route 6. The Illinois & Michigan Canal (I & M Canal) is located on the east and west sides of Brandon Road. Near the intersection of Brandon Road and Route 6 a portion of the drainage travels southeast approximately 600 feet across route 6 and follows the old I & M Canal where it dead ends by the Des Plaines River near the upstream portion of Brandon Locks. According to the Illinois Department of Natural Resources when the water in the concrete trough reaches a depth of approximately three feet it enters into overflows that allow some of it to be diverted west into the I & M canal and the Des Plaines river. A four-mile radius map of the Carlstrom Landfill site and a fifteen-mile surface water map are provided in Appendix A and B of this report.

2.2 Site History

The Carlstrom Landfill site was originally a dolomite limestone quarry. The years of operation are unknown. The original depth of the pit is unknown but is alleged to have been nearly 200 feet. In April, 1987 Hydropoll, Inc. conducted an electrical resistivity

study over the site and estimated the quarry floor to be from 115 to 120 feet below the surface. IEPA file information did not reveal any maps of the quarry but interviews with locals indicate that for years the pit was filled with water and the bottom was not visible. The quarry was used for dumping and nearby youths used it for swimming and parties and was the site of several drownings. After being permitted by IEPA in 1973 to deposit fill material an endloader fell into the water-filled pit. A diver sent down to locate and recover the endloader descended to an estimated depth of 70 to 80 feet, suggesting the floor was deeper in some areas.

The exact date that the Carlstrom Landfill site began accepting wastes is unknown but is thought to around 1957. Prior to this the land was used for unregulated dumping of various materials. An aerial photo taken by the Illinois Department of Transportation of the site in 1957 indicates that the pit still contained water while a photo taken in 1968 indicate that a large portion was filled in. Materials believed to have been deposited over the years include municipal wastes, heat boiler ash, fly ash, sewage treatment plant grit, heating plant scrubber sludge, oil water sewer waste, oil contaminated gravel, hot lime sludge, FCC catalyst fines, gypsum dry sludge, and asphalt strips. The permit issued by IEPA in 1973 allowed the site to accept only non-hazardous special wastes such as flyash, cinders and industrial and municipal sludges. This included specifically automobile insulation and amberlite from GAF Corporation. These are asphalt based materials generated by their Joliet operation. The site was also permitted to receive 20 tons per week of FCC catalyst fines, consisting of sand with aluminum oxide, and 60 tons per week of lime sludge. Also permitted were 50 cubic yards per day of dried gypsum sludge from Caterpillar Tractor

Company.

The landfill closed in January, 1985 and was covered with two feet of compacted clay and four inches of top soil. IEPA inspected the site for closure in February, 1985 and noted things being in order except for the failure to install the groundwater monitoring system as required by order of the Pollution Control Board. According to the Post-closure requirements the landfill was to monitor the groundwater for five years and send to IEPA quarterly reports. On January 12, 1989 a permit was granted approving the groundwater monitoring program which involved sampling an upgradient well and a shallow and deep downgradient well. Quarterly reports were received from March, 1989 to January, 1994. The parameters that were required to be analyzed for were limited and included pH, Total Alkalinity, Total Organic Carbon, Dissolved Chloride and Sulfate, and Residual On Evaporation. Parameters above limits included pH and Residual On Evaporation. Since some parameters were exceeded the permit that was issued required the facility to submit a permit application to perform a remedial investigation. This requirement was never met by the facility and hence the final closure was never approved.

2.3 Previous Investigations

The site was the subject of a CERCLA Preliminary Assessment by IEPA completed on September 1, 1984. A Site Inspection was performed by Ecology and Environment, Inc. on August 11, 1986. During the site inspection no samples were collected for analysis. A leachate seep was sampled in September, 1988 by IEPA and contained a number of inorganic contaminants including chromium, copper, cyanide,

barium, iron, manganese, nickel, silver, zinc, selenium and arsenic. A Site Inspection Prioritization Report was completed by B & V Waste Science and Technology Corp. for the site on June 18, 1993.

2.4 Regulatory Status

Based upon available file information the Carlstrom Landfill site does not appear to be subject to Resource Conservation and Recovery Act (RCRA) corrective action authorities. Information currently available does not indicate that the site is under the authority of the Atomic Energy Act (AEA), Uranium Mine Tailings Action (UMTRCA), or the Federal Insecticide Fungicide or Rodenticide Act (FIFRA).

SECTION 3.0 EXPANDED SITE INSPECTION ACTIVITIES

3.1 Sampling Activities

Sampling activities were conducted on March 30 and 31, 2004 and on May 4, 2004. On March 30 and 31, 2004 IEPA personnel collected a total of eight onsite soil samples and one background soil sample, three private well drinking water and one background sample, and a total of seven sediment and one background sample along the drainage pathway and in the I & M canal. On May 4, 2004 IEPA collected one onsite and two offsite groundwater samples and one residential well sample. All soil samples were collected using hand augers and trowels. Groundwater samples were collected from monitoring wells using bailers or with a submersible battery operated pump. Prior to the collection of the residential drinking water samples the pH, conductivity and temperature readings were allowed to stabilize. All

duplicate sample containers were filled in an alternating manner. These samples were collected from points that did not pass through any type of water treatment or conditioning systems. Sediment samples were collected with either stainless steel trowels or bucket augers. Following sample collection, all samples were transferred to containers provided by the Illinois EPA's Division of Laboratories. The sample containers were packaged and sealed in accordance with the IEPA's Office of Site Evaluation procedures. Sample analysis was provided by USEPA's Contract Laboratory Program (CLP), which utilizes a network of various laboratories throughout the United States. A complete analytical data package, including quality assurance review sheets, is located in Appendix E (Volume 2 of the Expanded Site Inspection report).

All samples were collected and shipped in accordance with the IEPA and USEPA procedures. All samples were analyzed for the Target Compound List (TCL) in Appendix C. During the March 30 and 31, 2004 soil and sediment organic samples were analyzed by Envirosystems, Inc. and inorganic soil and sediment samples were analyzed by Chemtech Consulting Group. Drinking water organic samples were analyzed by A4 Scientific and inorganics were analyzed by USEPA Region 5 Central Region Lab. During the May 4, 2004 sampling event the groundwater monitoring well sample organic analysis was performed by Ceimic Corporation and the inorganics by Chemtech Consulting Group, while the residential well organics was analyzed by Shealy Environmental Services and the inorganics by the USEPA Region 5 Central Region Lab. All laboratories were under contract with USEPA Region 5. All laboratory results were subsequently validated by USEPA Region 5.

3.2 Analytical Results

Sample locations are shown in Figure 4 and described in Tables 1, 2, 3 and 4. Key sample analytical results from the sampling events are shown in Tables 5, 6, 7 and 8. The analytical results for the soil samples were compared to Removal Action Levels (RAL's). Water samples were compared to Maximum Contaminant Levels (MCL's).

Key samples are samples in which contaminants were detected at concentrations at least three times background levels or had concentrations of potential health or environmental concerns. Samples meeting these criteria will be used to evaluate the site using the Hazard Ranking System (HRS). Analytes were found in onsite soil and sediment samples at levels that exceeded these health-based benchmarks. Analytes that exceeded health-based benchmarks included volatile, semivolatile, pesticide, tentatively identified compounds and inorganic substances.

SECTION 4.0 SITE SOURCES

This section includes descriptions of the various hazardous waste sources that have been identified at the Carlstrom Landfill site. The Hazard Ranking System defines a "source" as: "Any area where a hazardous substance has been stored, disposed or placed, plus those soils that have become contaminated from migration of hazardous substances". This does not include surface water or sediments below surface water that become contaminated.

Information obtained during the Expanded Site Inspection identified contaminated soil as the source of contamination at Carlstrom Landfill. As additional information becomes

available, the possibility exists that additional sources of contamination may exist.

4.1 Carlstrom Landfill

Information obtained throughout this CERCLA investigation has identified contaminated landfill as the primary source type at the Carlstrom Landfill site. The contamination was found at various locations throughout the site and the area of contamination is estimated to be approximately 9.8 acres and includes the original pit area. The samples were collected around the perimeter of the land filled area and contaminants are believed to have migrated from the landfill. No samples were collected on the landfill since there was concern of penetrating the cap. This is the area within sampling points X103 – X104 – X106 – X107 – X108 – X109 –X110 – X103. See Figure 4 for sample locations.

The analytical results from the soil samples collected onsite showed that a number of volatile, semivolatile, pesticide, tentatively identified compounds and inorganic substances that are at levels greater than three times background or exceeded Removal Action Levels. These include acetone, 2-Butanone, benzene, xylenes, anthracene, benzo(g,h) perylene, arochlor-1254, arochlor-1260, endosulfan sulfate, lead and others.

Section 5.0 MIGRATION PATHWAYS

The CERCLA program of Site Evaluation identifies three migration pathways and one exposure pathway, as identified in the Hazard Ranking System, by which hazardous substances may pose a threat to human health and/or the environment. Consequently, sites are evaluated on their known or potential impact to these pathways. The pathways are groundwater migration, surface water migration, soil exposure, and air migration.

5.1 Groundwater Pathway

The geology of the area consists of unconsolidated glacial drift overlying Silurian dolomite, the Maquoketa Shale Group, and the Cambrian-Ordovician system. Boring logs from monitoring wells drilled on the property in 1989 indicate that the site shallow geology consists of approximately three feet of brown sandy clay overlying the fractured dolomite which extended to the end of boring at 115 feet. Groundwater is believed to flow south towards the Des Plaines River. According to IEPA Public Water Supplies records the nearest municipal well is located approximately 2,000 feet northeast of the site. The nearest private well is located approximately 250 feet near the north side of the property at the end of Rock Island Ave.

Groundwater is used in the area for drinking. The city of Joliet, which surrounds the site on the north, east and south sides, utilizes the Cambrian-Ordovician system for its groundwater supply. The town of Rockdale lies on the west side of the property and also obtains its drinking water from municipal wells. There are also several private residential wells located near the site in Rockdale. The area is heavily populated on the west, north and east sides. The area southwest of the site across the Des Plaines River is more rural and would rely on private wells. Groundwater flow in the area is not known but is assumed to be to the south towards the Des Plaines River.

The number of people who use groundwater in a four-mile radius of the site was estimated using information obtained from the Illinois EPA Public Water Supplies records, USGS topographic maps and the average persons per household in Will county. The estimated population is:

Estimated Groundwater Target Population	
Onsite	0
0 to 1/4 mile	20
>¼ to 1/2 mile	5,058
>1/2 to 1 mile	1,154
>1 to 2 miles	10,688
>2 to 3 miles	12,116
>3 to 4 miles	27,396

Analytical results from groundwater samples collected from monitoring wells during the inspection had low levels of some organic and inorganic substances when compared to the upgradient background well indicating a release to groundwater. These samples were collected from wells ranging in depth from approximately 65 to 115 feet deep. These wells were constructed in 1989 as part of the quarterly monitoring program and had not been sampled since 1994. As a result not all wells produced a sufficient volume of water for a full spectrum laboratory analysis.

5.2 Surface Water Pathway

This pathway begins where surface water run-off from the site enters the first perennial water body. This pathway then travels fifteen miles downstream completing the 15-mile Target Distance Limit (TDL).

Carlstrom Landfill would drain surface runoff into a ditch along the north, east and south perimeter of the site. Water would flow from a point at the southeast portion of the site

across Rock Island Avenue into a ditch along the north side of the CRI & P railroad tracks and mix with runoff from other properties. The runoff would flow west along the north side of the railroad tracks and flow towards the southwest for approximately 3,400 feet where it enters into a concrete trough segment of Thorne Creek (locally called Brandon Creek) along the east side of Brandon Road. It then flows south approximately 650 feet to Route 6. The I & M Canal is located on the east and west sides of Brandon Road. The canal flows east approximately 600 feet across Route 6 where it dead ends by the Des Plaines River near the upstream portion of Brandon Locks on the Des Plaines River. Overflow from Brandon Creek enters a grate system and would be diverted west into the I & M canal. During a very heavy storm event some of the runoff would overflow into another grate system and would divert that portion into the Des Plaines River. Both the Des Plaines River and I & M canal flow towards the west in this area. The Probable Point of Entry (PPE) into the I & M canal is approximately 4,000 feet west of the site. The 15-mile Target Distance Limit extends downstream in the I & M canal for the whole distance and ends approximately one and a quarter miles west of the junction of the Des Plaines, Kankakee and Illinois Rivers. No surface water intakes are located in either the I & M canal or Des Plaines River.

The nearest wetland is located adjacent to the west side of the property and is classified as a Palustrine semi permanently flooded wetland with an unconsolidated bottom. There are approximately 5.8 miles of wetland frontage along the fifteen-mile surface water pathway in the I & M Canal. The I & M canal is used for recreation and according to the Illinois Department of Natural Resouces there are no threatened or endangered species within a mile of the site or in the downstream mileage.

Sediment samples collected onsite and in the I & M Canal during the inspection contained a number of volatile, semivolatile, pesticide, tentatively identified compounds and inorganic substances that are attributable to the site. These include samples X202, X203, X204, X205, X206, and X207/X208. These exceeded sediment background sample X201 collected at the north portion of the property where runoff from the property originates. The sample collected at the Probable Point of Entry (PPE) is sample X207/X208 collected at the north side of the I & M Canal near Brandon Road.

5.3 Soil Exposure Pathway

This exposure pathway focuses on contaminated soil in the upper two feet of the ground surface and within 200 feet of an occupied residence.

Carlstrom Landfill is situated in a remote area and access is limited. A private residence is located on the east side of the site across Rock Island Avenue and samples collected from the landfill were located farther than 200 feet from the house. The nearest non-worker is approximately 400 feet southeast in the businesses located on the south side of Route 6. The nearest school is located approximately one-quarter mile north of the site in Joliet. A review of USGS topographic maps, city maps and U.S. Census data indicate that there are approximately 6,038 people that live within a one-mile radius of the site. The estimated population within one mile of the site is:

Onsite	0
0 to ¼ mile	923
¼ to ½ mile	1,847
½ to 1 mile	3,268

Wetland inventory maps indicate that there is approximately one acre of wetlands located within a half-mile of the site.

Soil samples collected during the 2004 Expanded Site Inspection document areas of observed contamination by contaminants that are attributable to the site. These included volatile, semivoatile, pesticides, tentatively identified compounds and inorganic substances. The property is partially fenced to prevent unauthorized access although trespassers can enter from breaks in the fence or through the west side.

5.4 Air Pathway

The Carlstrom Landfill property is well vegetated with a few areas exposed due to erosion caused by ATV trespassers. The landfill area is fenced along the north, east and south sides. Access by vehicle is possible from the vacant land on the southwest. Rock Island Avenue ends at the east side of the property and the site is isolated from most nearby residences by Raynor Avenue, Interstate 80 and Route 6 and railroad tracks. There are no workers onsite. The area is remote and except for the resident located on the east side and the nearest group of houses is located approximately 600 feet north across Interstate 80 in Joliet. The nearest school is located approximately one quarter mile north of the property boundary. There are approximately 73,969 people who live within a 4-mile radius of the site. The estimated population potential for release is:

Estimated Air Target Population

Onsite	0
0 to ¼ mile	923
¼ to ½ mile	1,847

½ to 1 mile	3,268
1 to 2 miles	1,936
2 to 3 miles	27,280
3 to 4 miles	38,715

Air monitoring with a TVA (Toxic Vapor Analyzer) was conducted during the Expanded Site Inspection but did not indicate a release to the breathing zone.

SECTION 6 ADDITIONAL RISK BASED OBJECTIVES

This section discusses additional screening objectives used to evaluate the Carlstrom Landfill site. These objectives have not been used to assess the site for Hazard Ranking System (HRS) purposes.

6.1 Ontario Sediment and USEPA ECOTOX Threshhold Benchmarks

Sediment samples collected in the ditch along the north side of the ditch and I & M canal were compared to Ontario Sediment (low level) and USEPA ECOTOX Threshold benchmarks. Several sediment samples exceeded these benchmarks for semivolatile, pesticide/PCB's and inorganic substances.

SECTION 7.0 REFERENCES

Andrews Environmental Engineering Inc., April 7, 1989. Well Completion Reports and Boring logs for monitoring wells G-11S and G-11D for Carlstrom Landfill.

B & V Waste Science and Technology Corp., June 18, 1993. Site Inspection Prioritization Report for Carlstrom Landfill.

IEPA Division File, April 16, 1998. Memo to file from James L. Baldwin, Maywood FOS regarding review of files and data for Carlstrom Landfill post-closure plan.

IEPA Division Files, December 9, 1982. Notes regarding site information and permit history For Carlstrom Landfill.

IEPA Division Files, September 9, 1988. Special Analysis Form for inorganic analysis of leachate sample collected from Carlstrom Landfill.

IEPA Division Files, March 5, 2001. IEPA Part 807 Landfill Inspection Checklist for Carlstrom Landfill.

Ecology and Environment, Inc., August 29, 1986. Memo to file regarding site inspection at Carlstrom Landfill.

IEPA Division Files. PA Scoresheets for Carlstrom Landfill, 6/23/92.

Illinois Department of Natural Resources. Endangered Species Information Request letter of September 7, 2004 for Carlstrom Landfill.

United States Department of the Interior, National Wetlands Inventory Maps for Joliet, Elwood Channahon and Minooka, IL., Quadrangles, 7.5 minute series.

USGS, 1980, Plainfield, IL. Quadrangle, 7.5 minute series.

USGS, 1973, Joliet, IL. Quadrangle, 7.5 minute series.

USGS, 1973, Channahon, IL. Quadrangle, 7.5 minute series.

USGS, 1973, Elwood, IL. Quadrangle, 7.5 minute series.

IEPA Site Reconnaisance visit of November 2003 to Carlstrom Landfill.

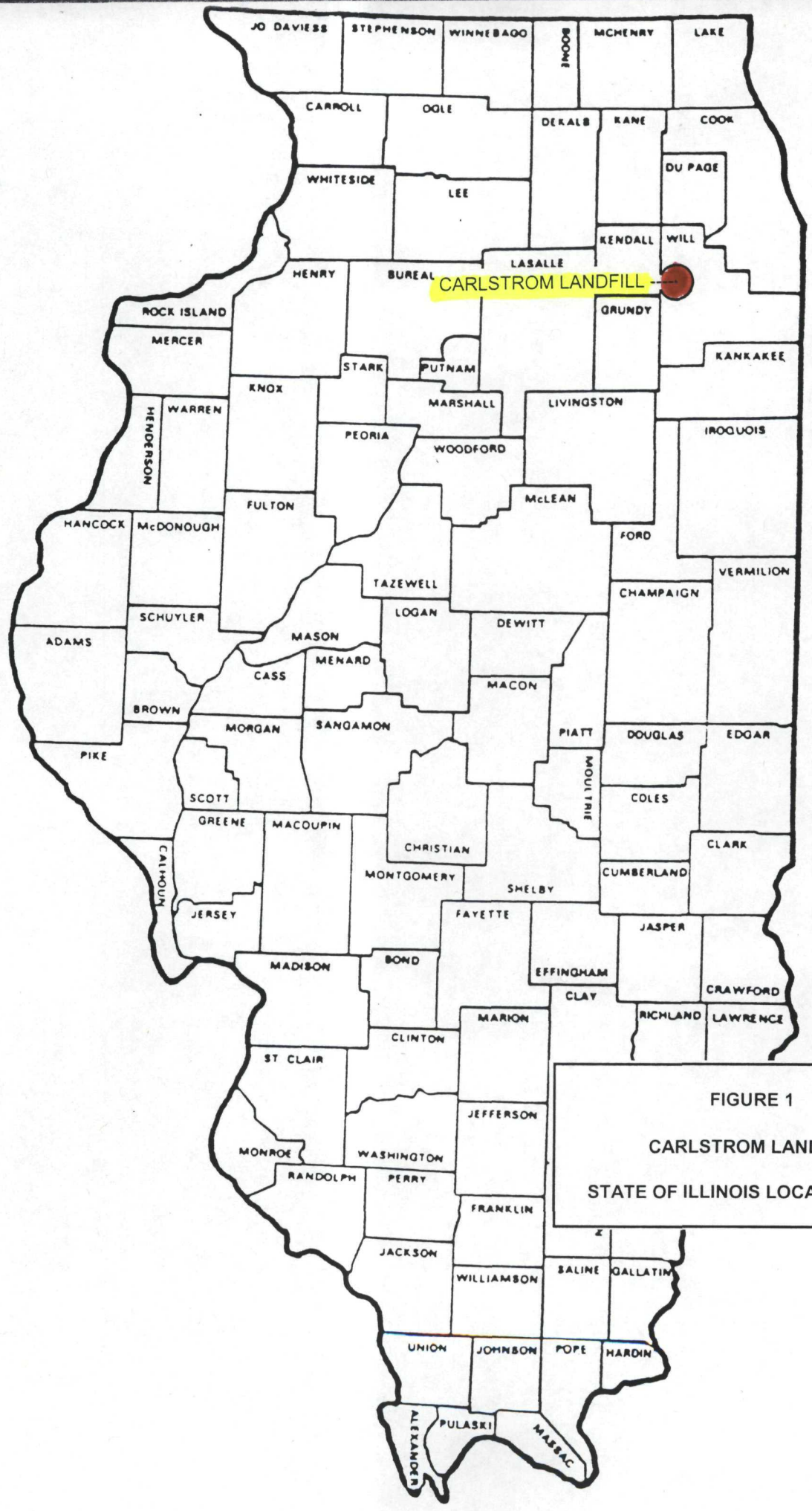


FIGURE 1

CARLSTROM LANDFILL

STATE OF ILLINOIS LOCATION MAP

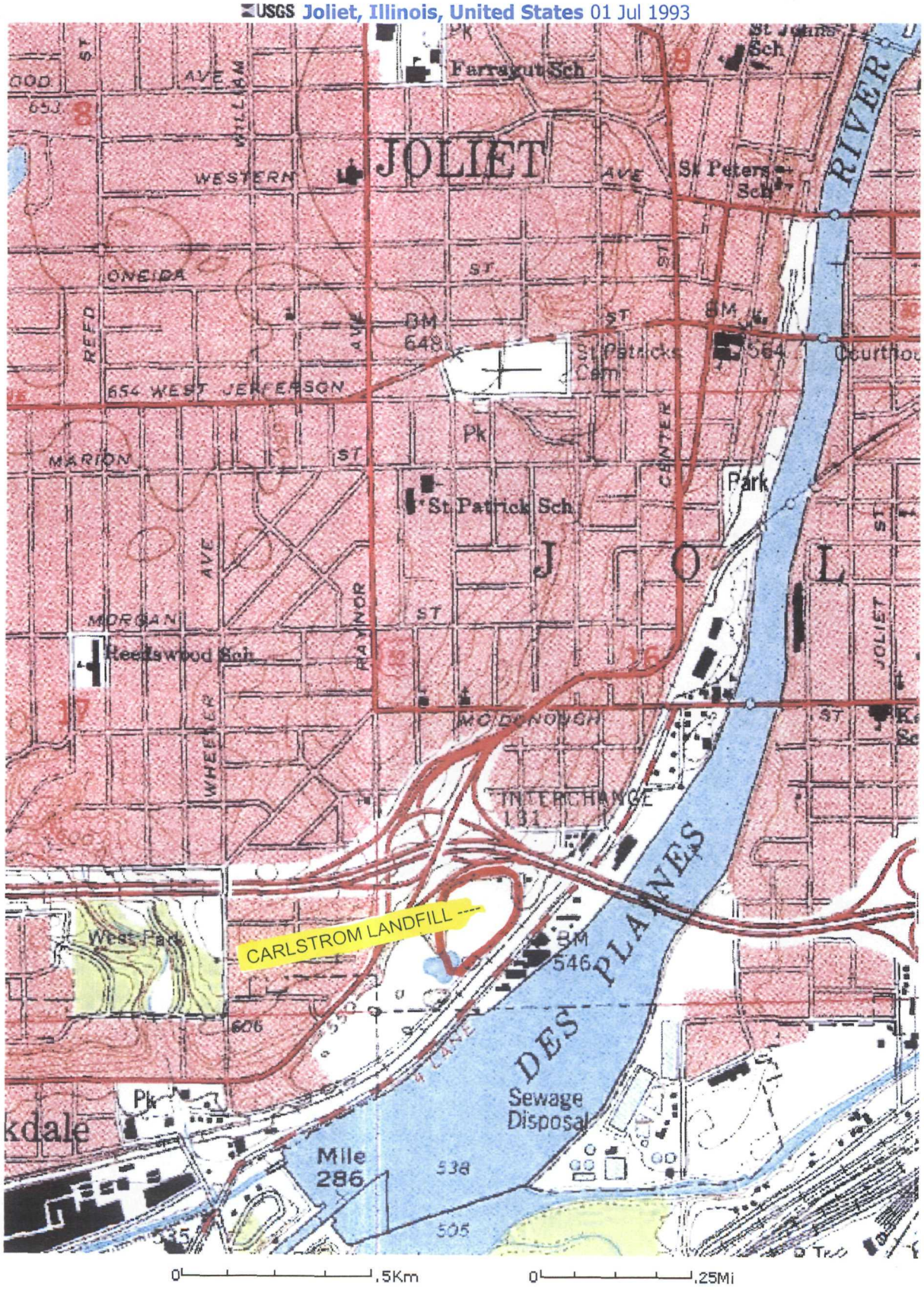


FIGURE 2

CARLSTROM LANDFILL

REGIONAL AREA TOPOGRAPHIC MAP

Figure 3
Carlstrom Landfill
Aerial Photograph

Source: 2002 USGS Aerial Photograph at: http//terraserver.homeadvisor.msn.com

Figure 4
Carlstrom Landfill
Sample Location Map

Source: 2002 USGS Aerial Photograph at: http//terraserver.homeadvisor.msn.com

TABLE 1
Soil Sample Description

Sample Date Time	Depth	Location	Appearance
X101 X102 3/31/2004 14:15	VOA - 1" Semi - 1" to 2" Inorg - 1" to 2"	Background soil sample and duplicate collected at Rockdale Village Park, located approximately 3,000 feet west of the Carlstrom Landfill	Black loam.
X103 3/31/2004 7:50	VOA - 3" Semi - 6" - 9" Inorg - 4" - 5"	Collected at the southeast corner of a metal building frame at the southeast portion of the property.	0 to 4" - Reddish brown fine sand and gravel, some fibrous material. 4" to 6" - Reddish fibrous material with an insulation-like appearance. 6" to 12" Grey clay and fibrous material.
X104 3/31/2004 8:10	VOA - 0 to 2" Semi - 4" to 6"' Inorg - 4" to 6"	Collected at the western portion of the landfill from a small ravine.	0 to 2" -silty clay with small to medium gravel. 2" to 6" - silty clay with fine to medium gravel.
X105 3/31/2004 8:50	VOA - 3" to 4" Semi -3" to 4" Inorg - 3" to 4"	Collected at the north area of the property in a small ditch, which is approximately 3 feet below the top of the landfill cap.	0 to 3" -silty clay. 3" to 6" - silty clay with some yellow sand and gravel.
X106 3/31/2004 9:15	VOA - 1" to 2" Semi - 1" to 2" Inorg - 1" to 2"	Collected at the north area of the property, near the access ramp to Interstate-80.	0 to 6" black silty clay.
X107 3/31/2004 10:15	VOA - 0" to 1" Semi - 1" to 3" Inorg - 1" to 3"	Collected at the north area of the property, near the original rock face of the quarry.	0 to 6" tan silty clay.
X108 3/31/2004 10:25	VOA - 0" to 1" Semi - 1" to 3" Inorg - 1" to 3"	Collected at the north area of the property, west of private residence.	0 to 6" red-brown sandy silt.
X109 3/31/2004 10:35	VOA - 1" to 2" Semi - 2" to 4" Inorg - 2" to 4"	Collected at the east area of the property, south of a private residence.	0 to 4" black silty clay; yellow clay at 4".
X110 3/31/2004 11:20	VOA - 4" to 6" Semi - 4" to 6" Inorg - 4" to 6"	Collected at the southeast area of the property.	0 to 6" gray silty clay.

TABLE 2
Sediment Sample Description

Sample Date Time	Depth	Location	Appearance
X201 3/31/2004 10:10	VOA - 4" to 8" Semi - 4" to 8" Inorg - 4" to 8"	Background sample collected on the north side of the landfill at the point where runoff from the Interstate 80 access ramp forms a ditch that carries runoff around the perimeter of a portion of the landfill.	Grey silty clay, some sand.
X202 3/31/2004 11:35	VOA - 10" Semi - 10" Inorg - 10"	Collected at the south side of the property where drainage collects onsite and flows south from the property.	Grey silty clay, some sand.
X203 3/31/2004 11:50	VOA -4" to 8" Semi - 4" to 8" Inorg - 4" to 8"	Collected approximately 10 feet from where the offsite drainage enters the railroad ditch.	Brown silty clay, some gravel.
X204 3/31/2004 12:40	VOA - 4" to 8" Semi - 4" to 8" Inorg - 4" to "	Collected from the ditch along the north side of the railroad tracks.	Black coarse silty sand, some organic material.
X205 3/31/2004 13:55	VOA - 1" to 6" Semi - 1" to 6" Inorg - 1" to 6"	Collected from the ditch along the north sides of the railroad track, approximately 100 feet east of the point where it enters Thorne Creek, along the east side of Brandon Road.	Black sandy silt, some organic matter.
X206 3/31/2004 14:45	VOA - 6" Semi - 2" to 6" Inorg - 2" to6"	Collected from the I & M Canal at the south side of Route 6. I & M Canal is blocked by a lock from entering the Des Plaines River, which is at a higher elevation than the canal.	Black silty clay, with organic matter.
X207 X208 3/30/2004 13:00	VOA - 1" Semi - 4" Inorg - 8"	Collected in the north side of the I & M canal, west of Brandon Road.	Medium sand and gravel; some black silt.
X209 3/30/2004 15:40	VOA - 1" Semi - 4" Inorg - 8"	Collected from the south side of the I & M canal approximately 350 feet west of Brandon Road.	Black silty clay.

TABLE 3
Drinking Water Sample Description

Sample Date Time	Depth	Location	Appearance
G201 G202 3/30/2004 13:40	31 feet	Sample and duplicate sample collected at a private well located approximately 2,600 feet southwest of the landfill. Owner stated that the well acts as an "artesian" well at times	Clear.
G203 3/30/2004 11:55	Pump set at 677 feet	Collected from the well at Brandon Locks, located approximately 3,000 feet southwest of the site.	Clear.
G204 3/30/2004 14:30	Unknown	Private well sampled from a business located approximately 1,800 feet southwest of the site.	Clear.
G205 5/4/2004 10:50	Unknown	Private well sampled from a residence located approximately 300 feet east of the site.	Clear.
G501 4/30/2004 10:40	1,565 feet	Collected from a city of Joliet municipal well located approximately 2,000 feet northeast of the site.	Clear.

TABLE 4
Groundwater Sample Description

Sample Date Time	Depth	Location	Appearance
G101 5/4/2004 10:50	101.5 feet. (Water was encountered at 35.25 feet).	Sample collected from onsite monitoring well located at the north end of the landfill. This well was used as a background well during quarterly sampling conducted from March, 1989 to January, 1994. Well went almost dry after purging approximately 11 gallons of water. Duplicate sample G102 was to be obtained at this location but could only obtain VOA sample due to insufficient volume	Grey cloudy color
G103 5/4/2004 14:10	115.0 feet. (Water was encountered at 33.5 feet).	Sample collected from monitoring well located approximately 300 feet east of the landfill near a private residence. The well was constructed in 1989 and is the deep well of a cluster of two located near the site.	Water initially had a dark grey cloudy appearance.
G104 5/4/2004 14:45	65.0 feet. (Water was encountered at 33.5 feet).	Sample collected from the shallow monitoring well located 8 feet south of well G103. After purging approximately 5 gallons the water level dropped to 59 feet. Well would only produce enough water for VOA, BNA and Total Metals analysis.	Grey cloudy color.

SITE NAME CARLSTROM LANDFILL
ILD NUMBER 980497721

TABLE 5
KEY SAMPLES
(Soil)

Sampling Location	X101		X102		X103		X104		X105		X106		X107		X108		X109		X110		RAL's
Date Sampled	3/31/2004 (Background)		3/31/2004		3/31/2004		3/31/2004		3/31/2004		3/31/2004		3/31/2004		3/31/2004		3/31/2004		3/31/2004		
Volatile Compound																					
ACETONE	6	J	--		--		--		--		--		--		3000	J	--		--		--
METHYLENE CHLORIDE	--		--		--		3	J	3	J	5	J	--		--		--		--		--
2-BUTANONE	--		--		--		--		--		--		--		30		--		--		--
CYCLOHEXANE	--		--		--		--		--		--		--		22	J	--		--		--
BENZENE	--		--		--		--		--		--		--		41		--		--		5900000
METHYLCYCLOHEXANE	--		--		--		--		--		--		--		11	J	--		--		--
TOLUENE	--		--		--		--		--		--		--		12	J	--		--		16000000
XYLENES (TOTAL)	--		--		--		--		--		--		--		41	J	--		--		--
ISOPROPYLBENZENE	--		--		--		--		--		--		--		12	J	--		--		--
	ug/Kg		ug/Kg				ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg
Semivolatile Compound																					
PHENANTHRENE	87	J	--		--		--		--		--		--		440	J	--		--		1000000
ANTHRACENE	--		--		--		42	J	--		--		--		--		--		49	J	1000000
FLUORANTHENE	240	J	--		--		--		--		--		--		850	J	--		--		1000000
BENZO(A)ANTHRACENE	110	J	--		--		--		--		--		--		480	J	--		--		1000000
CHRYSENE	180	J	--		750	J	--		--		--		--		550	J	--		--		1000000
BIS(2-ETHYLHEXYL)PHTHALATE	61	J	--		1200	J	--		--		--		--		--		--		--		12000000
BENZO(K)FLUORANTHENE	150	J	--		--		--		--		--		--		560	J	--		--		1000000
BENZO(A)PYRENE	220	J	--		710	J	--		--		--		--		--		--		--		1000000
INDENO(1,2,3-CD)-PYRENE	180	J	--		480	J	--		--		--		--		--		--		--		1000000
BENZO(G,H,I)PERYLENE	--		--		490	J	65	J	--		--		--		--		--		48	J	1000000
	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg
Pesticide/PCB Compound																					
DELTA-BHC	--		--		--		2.3	J	--		--		--		--		--		--		--
HEPTACHLOR	--		--		2.2	J	--		--		--		--		--		--		--		38000
HEPTACHLOR EPOXIDE	--		--		17	J	--		--		2.4	J	--		--		--		17	J	23000
ENDOSULFAN I	--		--		2.3	J	--		--		--				--		--		--		38000
DIELDRIN	--		--		17	J	--		--		--		--		--		--		25	J	11000
4,4'-DDE	--		--		--		--		--		16	J	--		--		--		11	J	500000
ENDRIN	--		--		13	J	--		--		--		--		--		--		19	J	230000
ENDOSULFAN II	--		--		--		--		--		0.6	J			--		--		--		39000
ENDOSULFAN SULFATE	--		--		--		--		--		50	J	--		--		--		--		--
4,4'-DDT	5.1	J	--		--		--		--		20	J			--		--		--		390000
METHOXYCHLOR	--		--		86	J	--		--		--		--		--		--		--		--
ENDRIN ALDEHYDE	--		--		27	J	--		--		--		--		--		--		10	J	--
ALPHA-CHLORDANE	--		--		13	J	3.6	J	--		--		--		--		--		17	J	--
GAMMA-CHLORDANE	--		--		25	J	2.6	J	--		6.3	J	--		--		--		28	J	--
AROCLOR-1254	--		--		410	J	--		--		--		--		100	J	--		430	J	22000
AROCLOR-1260	--		--		--		--		--		--		--		110	J	--		300	J	22000
	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg
Tentatively Identified Compounds																					
DIMETHYL SULFIDE	--		110	NJ	21	NJ	--		--		27	NJ	57	NJ	--		54	NJ	--		--
CYCLOTETRASILOXANE,OCTAMETHYL-	--		--		17	NJ	--		--		--		--		--		27	NJ	--		--
BENZENE,METHYL(1-METHYLETHYL)-	--		--		--		--		--		--		--		14	NJ	--		--		--
1,1'-BIPYNYL,BIS(1-METHYL)-	--		--		3400	NJ	--		--		--		--		--		--		--		--
2H-1-BENZOPYRAN-2-ONE	--		--		--		--		--		140	NJ	--		--		--		--		--
1,21-DOCOSADIENE	--		--		--		--		--		1200	NJ	--		--		--		--		--
STIGMASTEROL,22,23-DIHYDRO-	--		--		--		--		--		810	NJ	--		--		--		--		--
BENZOFURAN	--		--		--		--		--		--		130	NJ	--		--		--		--
2-PHENANTHRENOL,4B,5,6,7,8 9,10-OCTA	--		--		--		--		--		--		650	NJ	--		--		--		--
STIGMAST-4-EN-3-ONE	--		660	NJ	--		--		--		--		350	NJ	--		--		--		--
BICYCLO(7.2.0)UNDEC-4-ENE,4,11,11-TRIME	--		--		--		--		--		--		--		1100	NJ	--		--		--
URA-12-EN-24-OIC ACID,3-OXO-,METHYL ES	--		--		--		--		--		--		--		--		270	NJ	--		--
OXIRANE,HEPTADECYL-	--		630	NJ	--		--		--		--		--		--		--		--		--
	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg
Inorganics																					
BARIUM	68.2		--		--		--		--		253		--		--		--		--		--
CADMIUM	0.62	J	--		3.1		--		--		2.3		--		2.8		5.4		4.2		25
CHROMIUM	11.4		--		41.6		--		--		--		--		--		42.3		--		400
LEAD	50.8		--		--		--		--		1130		--		--		--		--		1000
MERCURY	--		--		--		--		--		--		0.16		0.39		0.55		0.21		1600
SILVER	--		--		--		--		--		--		--		--		3		2.6		2300
SODIUM	--		--		200	J	122	J	162	J	--		225	J	262	J	131	J	391	J	--
CYANIDE	--		--		--		--		--		--		--		--		1.5		--		350
	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg
pH	8.3		7.9		7.8		8.2		8.0		8.2		8.4		8.3		7.5		8.7		

SITE NAME CARLSTROM LANDFILL
ILD NUMBER 980497721

TABLE 6
KEY SAMPLE SUMMARY
Sediment

Sampling Location Date Sampled	X201 3/31/2004	X202 3/31/2004	X203 3/31/2004	X204 3/31/2004	X205 3/31/2004	X206 3/31/2004	X207 3/30/2004	X208 3/30/2004	X209 3/30/2004	Ontario Sediment Benchmark (Low)	USEPA ECOTOX Thresholds
Volatile Compound											
ACETONE	--	--	--	--	--	--	--	6 J	8 J	--	--
CHLOROBENZENE	--	--	--	--	--	--	--	--	6 J	--	820
1,4-DICHLOROBENZENE	--	--	--	--	--	--	--	--	3 J	--	350
1,2-DICHLOROBENZENE	--	--	--	--	--	--	--	--	8 J	--	340
	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Semivolatile Compound											
NAPHTHALENE	--	--	77 J	--	--	--	--	--	650 J	--	480
2-METHYLNAPHTHALENE	--	--	80 J	340 J	--	--	--	--	710 J	--	--
ACENAPHTHYLENE	--	--	250 J	560 J	1300 J	--	--	380 J	4000 --	--	--
ACENAPHTHENE	--	--	88 J	--	--	--	--	380 J	2500 J	--	620
DIBENZOFURAN	--	--	88 J	--	--	--	--	--	750 J	--	2000
FLUORENE	--	--	160 J	--	--	--	--	480 J	3100 --	--	540
PHENANTHRENE	3800	--	1200	1300 J	1500 J	2600 J	1500 J	2600	8400 --	--	860
ANTHRACENE	850 J	--	--	--	--	--	--	--	9200 --	--	--
FLUORANTHENE	7400	--	--	3100	12000	6700	4000	5300	30000 --	--	2900
PYRENE	5600	950 J	2100	2400 J	15000	6500	4000	6100	40000 --	--	660
BUTYLBENZYLPHTHALATE	--	--	100 J	--	820 J	--	--	--	-- --	--	11000
BENZO(A)ANTHRACENE	2900	--	--	--	8500	--	--	--	26000 --	--	--
CHRYSENE	3600	--	--	--	10000	--	--	--	29000 --	--	--
BIS(2-ETHYLHEXYL)PHTHA	630 J	--	--	--	13000	--	--	--	-- --	--	--
BENZO(B)FLUORANTHENE	3100	--	--	--	11000	--	--	--	17000 --	--	--
BENZO(K)FLUORANTHENE	2900	--	--	--	9600	--	--	--	16000 --	--	--
BENZO(A)PYRENE	2300 J	590 J	970	1100 J	7800	4300 J	1900 J	2300 J	22000 --	--	430
INDENO(1,2,3-CD)-PYRENE	1700 J	--	--	--	6000	--	--	--	12000 --	--	--
DIBENZO(A,H)-ANTHRACEN	560 J	--	--	--	2000 J	--	--	--	4900 --	--	--
BENZO(G,H,I)PERYLENE	400 J	--	--	--	1300 J	1400 J	--	--	4400 --	--	--
	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Pesticide/PCB Compound											
ALPHA-BHC	--	--	--	--	--	--	4.0 J	3.8 J	15 J	--	6
BETA-BHC	--	--	--	--	--	--	--	--	11 NJ	--	6
ALDRIN	--	--	--	--	--	--	2.6 NJ	2.8 NJ	--	2	--
ENDOSULFAN I	--	--	--	4.6 J	--	--	--	--	-- --	--	2.9
DIELDRIN	14 J	5.0 J	7.6 J	12 J	19 J	12 J	--	--	8.3 J	2	--
4,4'-DDE	7.2 J	--	--	11 J	20 J	21 J	--	--	-- --	5	--
ENDRIN	--	--	--	12 J	--	11 J	7.3 J	6.6 J	15 J	3	--
ENDOSULFAN II	--	--	--	9.8 J	--	--	--	--	10 J	--	14
4,4'-DDD	--	--	--	22 J	19 J	--	5.7 J	8.3 J	20 J	8	--
4,4'-DDT	24 J	12 J	11 J	38 J	74 J	--	--	--	15 J	7	--
METHOXYCHLOR	--	--	--	51 J	--	--	--	--	-- --	--	19
ENDRIN ALDEHYDE	--	4.3 J	--	--	--	--	--	--	-- --	--	--
GAMMA-CHLORDANE	--	6.1 J	8.8 J	7.6 J	21 J	37 J	--	--	-- --	7	--
AROCLOR-1260	220 J	--	--	--	--	--	--	--	-- --	5	--
	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Tentatively Identified Compounds											
LIMONENE	--	--	--	--	--	--	--	94 NJ	--	--	--
BENZO[E]PYRENE	--	--	--	--	9900 NJ	9900 NJ	1500 NJ	--	17200 NJ	--	--
ANTHRACENE, 2-METHYL-	--	--	--	--	--	--	--	770 NJ	-- --	--	--
1H-CYCLOPROPA[L]PHENA	--	--	--	--	--	--	--	870 NJ	9600 NJ	--	--
4B,8-DIMETHYL-2-ISOPROF	--	--	--	--	--	--	--	300 NJ	-- --	--	--
9,10-DIMETHYLANTHRACEI	--	--	--	--	--	--	--	1000 NJ	-- --	--	--
1,1'-BIPHENYL,BIS(1-METH'	--	--	--	--	--	--	--	11000 NJ	-- --	--	--
DIBENZOTHIOPHENE-4MET	--	--	--	--	--	--	--	--	5700 NJ	--	--
PHENANTHRENE, 1-METHY	--	--	--	--	--	--	--	--	5000 NJ	--	--
PHENANTHRENE, 2-METHY	--	--	--	--	--	--	--	--	10200 NJ	--	--
1A,9B-DIHYDRO-1H-CYCLO	--	--	--	--	--	--	--	--	5700 NJ	--	--
ANTHRACENE, 1,4-DIMETH	--	--	--	--	--	--	--	--	6400 NJ	--	--
PYRENE, 1-METHYL-	--	--	520 NJ	--	1400 NJ	--	--	--	14900 NJ	--	--
PYRENE, 4-METHYL-	--	--	--	--	1100 NJ	--	--	--	5600 NJ	--	--
FLUORANTHENE,2-METHYI	--	--	--	--	--	--	--	--	12000 NJ	--	--
11H-BENZO[B]FLUORENE	--	--	--	--	2200 NJ	--	--	--	5600 NJ	--	--
BENZO[B]NAPHTHO[2,1-D]T	730 NJ	--	--	--	--	--	--	--	5500 NJ	--	--
BENZO[C]PHENANTHRENE	--	--	--	--	--	--	--	--	5200 NJ	--	--
3,4-DIHYDROCYCLOPENTA	--	--	--	--	--	--	--	--	6000 NJ	--	--
TRIPHENYLENE,2-METHYL-	--	--	480 NJ	--	--	--	--	--	8500 NJ	--	--
CHRYSENE,1-METHYL-	--	--	--	--	--	--	--	--	4500 NJ	--	--
NAPHTHO[2,3,B]NORBORN	--	--	--	--	--	--	--	--	5900 NJD	--	--
PHENOL,2,4-BIS(1,1-DIMET	--	--	370 NJ	--	--	--	--	--	-- --	--	--
OCTABENZONE	--	--	890 NJ	--	--	--	--	--	-- --	--	--
NAPHTHALENE,1,2-DIMETH	--	--	--	580 NJ	--	--	--	--	-- --	--	--
7H-BENZ[DE]ANTHRACEN-7	--	--	--	--	--	--	--	--	-- --	--	--
BENZ[A]ANTHRACENE,1-M	--	--	--	--	1800 NJ	--	--	--	-- --	--	--
1-BROMO-11-IODOUNDECA	--	--	--	--	1400 NJ	--	--	--	-- --	--	--
HYDRAZINE,1-(3-NITROPHE	--	--	--	--	--	--	--	--	-- --	--	--
	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Inorganics											
ANTIMONY	--	--	1.5 J	8.6 J	8 J	2.1 J	2.7 J	1.8 J	4.8 J	--	--
ARSENIC	6.2	5.9	9.5	63.1	16.4	6.3	14.5	8.9	25.6	6	--
CADMIUM	1.4 J	8.6	0.27 J	1.7	2.7	3.2	6.1	7	13	0.6	--
CHROMIUM	37.3	--	--	--	--	--	--	--	212 --	--	--
COPPER	52.6	51.5	41.7	87.3	137	54.5	123 J	82.3 J	378	16	--
LEAD	143	131	63.6	204	167	122	267	176	521	31	--
MERCURY	0.22	0.85	--	--	--	0.21	4.8	0.67	5.1	0.2	--
NICKEL	19	29	21.6	26.8	24.9	23.3	24.9	25.1	60.9	16	--
SILVER	--	3	--	--	--	--	--	--	7.8	,5	--
VANADIUM	--	14.8	24.9	22.4	--	--	--	--	22.3	--	--
ZINC	320	421	140	405	708	293	557	409	1210	120	--
CYANIDE	--	--	--	--	--	--	--	--	12	0.1	--
	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
pH	7.3	9.7	7.6	8.3	7.9	7.6	8.4	7.8	8.3		

SITE NAME: CARLSTROM LANDFILL
ILD NUMBER: 980497721

TABLE 7
KEY SAMPLE SUMMARY
(Drinking Water)

Sampling Location :	G203		G201		G202		G204		G205		G501		MCL's
Date Sampled :	3/30/2004 (Background)		3/30/2004		3/30/2004		3/30/2004		5/4/2004		3/30/2004		
Volatile Compound:													
Chloromethane	--		--		--		--		0.16	J	--		--
1,1,1-Trichloroethane	--		--		--		0 35	J	--		--		200
	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L
Semivolatile Compound:													
Di-n-butylphthalate	--		1.7	J	1.5	J	--		--		--		--
bis(2-Ethylhexyl)phthalate	--		--		--		--		--		7.6		--
	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L
Pesticide/PCB Compound:													
None Detected	--		--		--		--		--				--
	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L
Tentatively Identified Compounds:													
None Detected	--		--		--		--		--				--
	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L
Inorganics:													
Calcium	51,600		--		--		--		207000		--		--
Chromium	13.5	L	--		--		--		44.5		--		100
Cobalt	--		--		--		1.8	L,J	1.2	J,L	--		--
Copper	23.5		--		--		--		88.3		--		--
Iron	2,160		--		--		--		1070		--		1000
Lead	--		--		--		--		6.0		--		50
Magnesium	24,500		89,500		82,700		83,900		118000		--		--
Nickel	1.0	L,J	--		--		11.8		6.3	J	--		100
Sodium	92,800		--		--		--		247000		--		--
	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L

SITE NAME: CARLSTROM LANDFILL
ILD NUMBER: 980497721

TABLE 8
Key Samples
(Groundwater)

Sampling Location :	G101		G102	G103		G104		MCL's
Date Sampled :	5/4/2004 (Background)		5/4/2004	5/4/2004		5/4/2004		
Volatile Compound								
ACETONE	--		--	--		15	J	--
CARBON DISULFIDE	--		--	--		2	J	--
	ug/L		ug/L	ug/L		ug/L		ug/L
Semivolatile Compound								
CAPROLACTAM	--		--	--		1	J	--
	ug/L		ug/L	ug/L		ug/L		ug/L
Pesticide/PCB Compound								
None Detected	--		--	--		--		--
	ug/L		ug/L	ug/L		ug/L		ug/L
Tentatively Identified Compounds								
CYCLOPENTASILOXANE-DECAMETH	--		--	47	NJ	--		--
CYCLOPENTASILOXANE-DODECAME	--		--	16	NJ	--		--
DROMETRIZOLE	--		--	--		34	NJ	--
2-FLUORO-6-NITROPHENOL	--		--	--		4	NJ	--
PHENOL,2-FLUORO-4-NITRO-	--		--	--		7	NJ	--
	ug/L		ug/L	ug/L		ug/L		ug/L
Inorganics								
ALUMINUM	218	J+	--	--		1620		--
	--		--	--		--		--
BARIUM	--		--	--		577		2000
	--		--	--		--		2000
CHROMIUM	13.5		--	--		29.9		100
	--		--	--		--		100
COPPER	32.6		--	--		--		--
	--		--	--		--		--
IRON	2120		--	--		3380		1000
	--		--	--		--		1000
LEAD	--		--	--		22.9		50
	--		--	--		--		50
MANGANESE	76.4		--	--		223		150
	--		--	--		--		150
ZINC	--		--	--		75.2		5000
	--		--	--		--		5000
	ug/L			ug/L		ug/L		ug/L

NOTE: Shaded inorganic substances were analyzed for for Total Metals, unshaded inorganic substances were analyzed for Dissolved Metals.

APPENDIX A

SITE 4-MILE RADIUS MAP

CARLSTROM LANDFILL

Carlstrom Landfill
4-Mile Radius Map

Legend

- Site
- Community Water Supply Well
- Distance Rings: 0.25 Miles, 0.5 Milles, 1,2,3, and 4 Miles

N

Source: United States Geological Survey 7.5 Minute Series Topographical Map in Digital Raster Graphic Format, 1:100,000 Scale Quadrangles, Index # 41087a1, 41087e1, 41088a1, and 41088e1

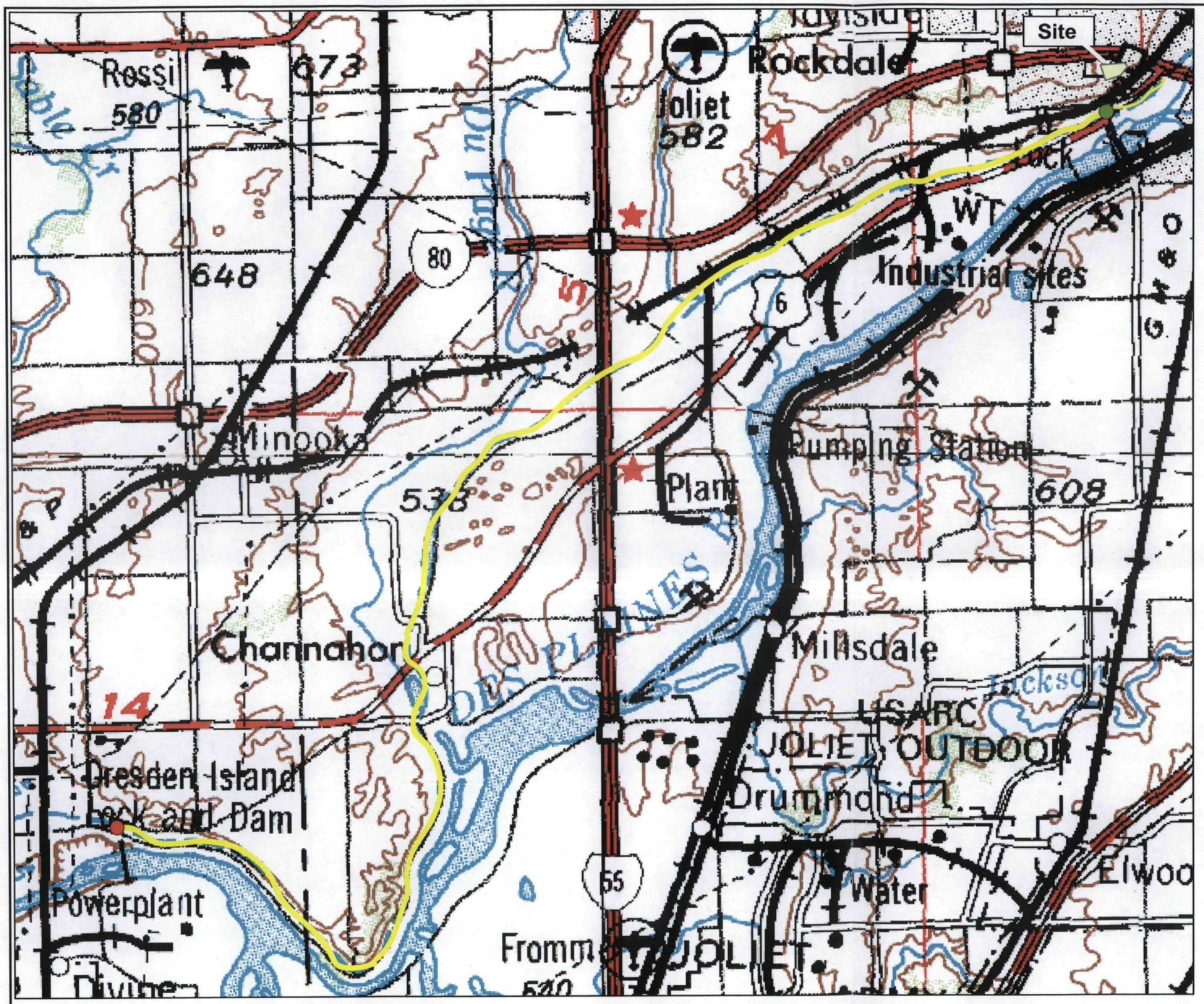
0 600 1,200 2,400 3,600 4,800 Meters

APPENDIX B

15 – MILE SURFACE WATER MAP

CARLSTROM LANDFILL

Carlstrom Landfill
15-Mile Surface Water Route Map



Legend

- Site
- Probable Point of Entry
- Surface Water Route
- 15-Mile Target Distance Limit

N

Source: United States Geological Survey
Topographical Map in Digital Raster Graphic Format,
1:250,000 Scale, Index # 41088a1

0 0.5 1 2 3 4 Miles

APPENDIX C

TARGET COMPOUND LIST AND DATA QUALIFIERS

CARLSTROM LANDFILL

TARGET COMPOUND LIST

Volatile Target Compounds

Chloromethane	1,2-Dichloropropane
Bromomethane	cis-1,3-Dichloropropene
Vinyl Chlorde	Trichloroethene
Chloroethane	Dibromochloromethane
Methylene Chloride	1,1,2-Trichloroethane
Acetone	Benzene
Carbon Disulfide	trans-1,3-Dichloropropene
1,1-Dichloroethene	Bromoform
1,1-Dichloroethane	4-Methyl-2-pentanone
1,2-Dichloroehtene (total)	2-Hexanone
Chloroform	Tetrachloroethene
1,2-Dichloroethane	1,1,2,2-Tetrachloroethane
2-Butanone	Toluene
1,1,1-Trichloroethane	Chlorobenzene
Carbon Tetrachloride	Ethylbenzene
Vinyl Acetate	Styrene
Bromodichloromethane	Xylenes (total)

Base/Neutral Target Compounds

Hexachloroethane	2,4-Dinitrotoluene
bis(2-Chloroethyl) Ether	Diethylphthalate
Benzyl Alcohol	N-Nitrosodiphenylamine
bis (2-Chloroisopropyl) Ether	Hexachlorobenzene
N-Nitroso-Di-n-Propylamine	Phenanthrene
Nitrobenzene	4-Bromophenyl-phenylether
Hexachlorobutadiene	Anthracene

2-Methylnaphthalene	Di-n-Butylphthalate
1,2,4-Trichlorobenzene	Fluoranthene
Isophorone	Pyrene
Naphthalene	Butylbenzylphthalate
4-Chloroaniline	bis(2-Ethylhexyl)Phthalate
bis(2-chloroethoxy)Methane	Chrysene
Hexachlorocyclopentadiene	Benzo(a)Anthracene
2-Chloronaphthalene	3-3'-Dichlorobenzidene
2-Nitroaniline	Di-n-Octyl Phthalate
Acenaphthylene	Benzo(b)Fluoranthene
3-Nitroaniline	Benzo(k)Fluoranthene
Acenaphthene	Benzo(a)Pyrene
Dibenzofuran	Ideno(1,2,3-cd)Pyrene
Dimethyl Phthalate	Dibenz(a,h)Anthracene
2,6-Dinitrotoluene	Benzo(g,h,i)Perylene
Fluorene	1,2-Dichlorobenzene
4-Nitroaniline	1,3-Dichlorobenzene
4-Chlorophenyl-phenylether	1,4-Dichlorobenzene

Acid Target Compounds

Benzoic Acid	2,4,6-Trichlorophenol
Phenol	2,4,5-Trichlorophenol
2-Chlorophenol	4-Chloro-3-methylphenol
2-Nitrophenol	2,4-Dinitrophenol
2-Methylphenol	2-Methyl-4,6-dinitrophenol
2,4-Dimethylphenol	Pentachlorophenol
4-Methylphenol	4-Nitrophenol
2,4-Dichlorophenol	

Pesticide/PCB Target Compounds

alpha-BHC	Endrin Ketone
beta-BHC	Endosulfan Sulfate
delta-BHC	Methoxychlor
gamma-BHC (Lindane)	alpha-Chlordane
Heptachlor	gamma-Chlordane
Aldrin	Toxaphene
Heptachlor epoxide	Aroclor-1016
Endosulfan I	Aroclor-1221
4,4'-DDE	Aroclor-1232
Dieldrin	Aroclor-1242
Endrin	Aroclor-1248
4,4'-DDD	Aroclor-1254
Endosulfan II	Aroclor-1260
4,4'-DDT	

Inorganic Target Compounds

Aluminum	Manganese
Antimony	Mercury
Arsenic	Nickel
Barium	Potassium
Beryllium	Selenium
Cadmium	Silver
Calcium	Sodium
Chromium	Thallium
Cobolt	Vanadium
Copper	Zinc
Iron	Cyanide
Lead	Sulfide
Magnesium	

DATA QUALIFIERS

QUALIFIER	DEFINITION ORGANICS	DEFINITION INORGANICS
U	Compound was tested for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL is also multiplied by two, to account for the fact that only half of the extract is recovered.	Analyte was analyzed for but not detected.
J	Estimated value. Used when estimating a concentration for tentatively identified compounds (TICS) where a 1:1 response is assumed or when the mass spectral data indicate the presence of a compound that meets the identification criteria and the result is less than the sample quantitation limit but greater than zero. Used in data validation when the quality control data indicate that a value may not be accurate.	Estimated value. Used in data validation when the quality control data indicate that a value may not be accurate.
C	This flag applies to pesticide results where the identification is confirmed by GC/MS.	Method qualifier indicates analysis by the Manual Spectrophotometric method.
B	Analyte was found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.	The reported value is less than the CRDL but greater than the instrument detection limit (IDL).
D	Identifies all compounds identified in an analysis at a secondary dilution factor. If a sample or extract is re-analyzed at a higher dilution factor as in the "E" flag, the "DL" suffix is appended to the sample number on the Form I for the diluted sample, and all concentration values are flagged with the "D" flag.	Not used.
E	Identifies compounds whose concentrations exceed the calibration range for that specific analysis. All extracts containing compounds exceeding the calibration range must be diluted and analyzed again. If the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses must be reported on separate Forms I. The Form I for the diluted sample must have the "DL" suffix appended to the sample number.	The reported value is estimated because of the presence of interference.
A	This flag indicates that a TIC is a suspected aldol concentration product formed by the reaction of the solvents used to process the sample in the laboratory.	Method qualifier indicates analysis by Flame Atomic Absorption (AA).
M	Not used.	Duplicate injection (a QC parameter not met).

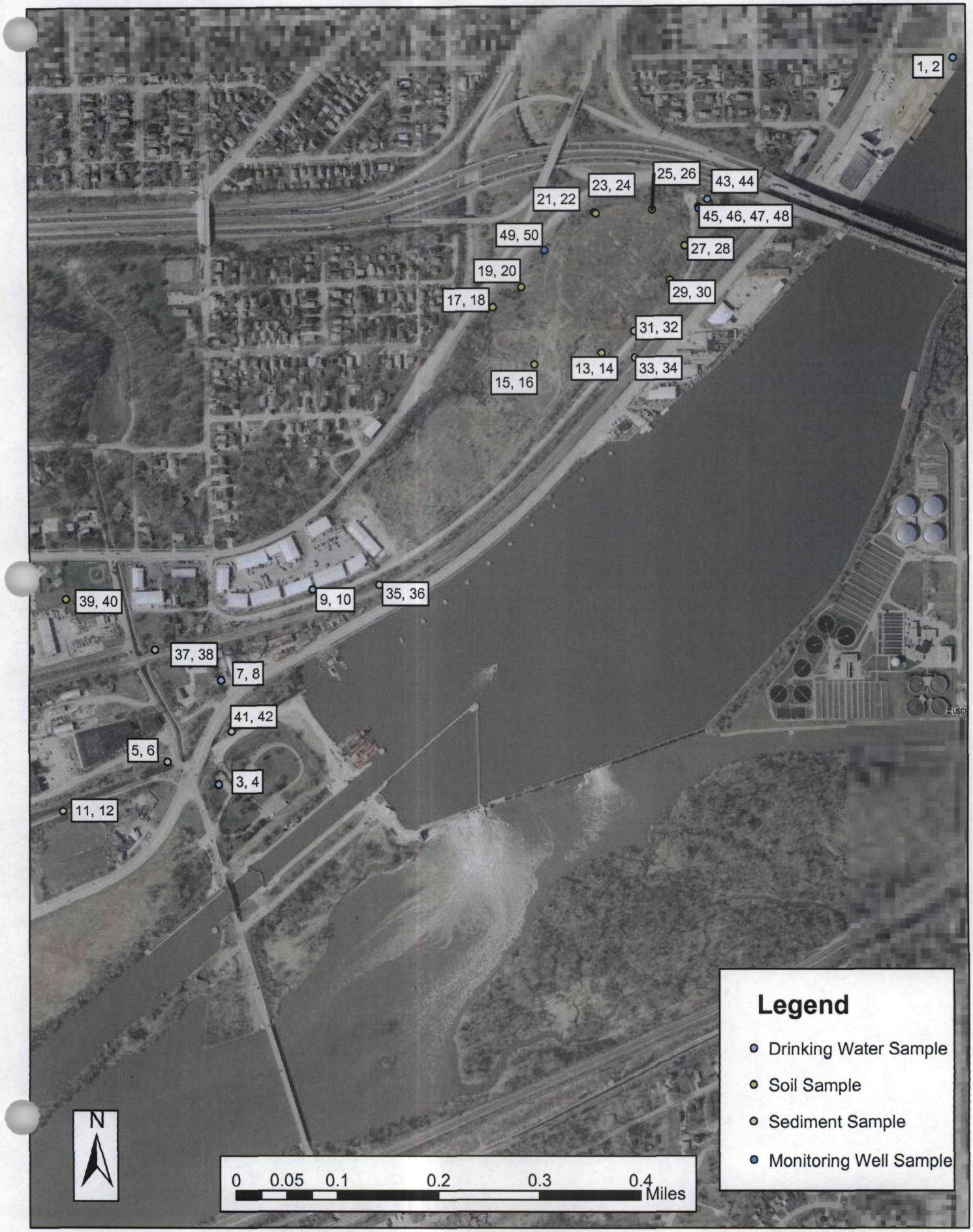
N	Not used	Spiked sample (a QC parameter not met).
S	Not used.	The reported value was determined by the Method of Standard Additions (MSA).
W	Not used.	Post digestion spike for Furnace AA analysis (a QC parameter) is out of control limits of 85% to 115% recovery, while sample absorbance is less than 50% of spike absorbance.
*	Not used.	Duplicate analysis (a QC parameter not within control limits).
+	Not used.	Correlation coefficient for MSA (a QC parameter) is less than 0.995.
P	Not used.	Method qualifier indicates analysis by ICP (Inductively Coupled Plasma) Spectroscopy.
CV	Not used.	Method qualifier indicates analysis by Cold Vapor AA.
AV	Not used.	Method qualifier indicates analysis by Automated Cold Vapor AA.
AS	Not used.	Method qualifier indicates analysis by Semi-Automated Cold Spectrophotometry.
T	Not used.	Method qualifier indicates Titrimetric analysis.
NR	The analyte was not required to be analyzed.	The analyte was not required to be analyzed.
R	Rejected data. The QC parameters indicate that the data is not usable for any purpose.	Rejected data. The QC parameters indicate that the data is not usable for any purpose.

APPENDIX D

IEPA SITE PHOTOGRAPHS

CARLSTROM LANDFILL

Carlstrom Landfill
Photo Location Map



Source: 2002 USGS Aerial Photograph at: http//terraserver.homeadvisor.msn.com

Expanded Site Inspection Photos

DATE: 3/30/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 10:40	SITE NAME: Carlstrom Landfill

PHOTOGRAPH TAKEN BY: R. Casper

COMMENTS: Picture taken toward: South.

Photo Number 1.

Sample G501 was collected from a Joliet municipal well located 2,000 feet northeast.

DATE: 3/30/04

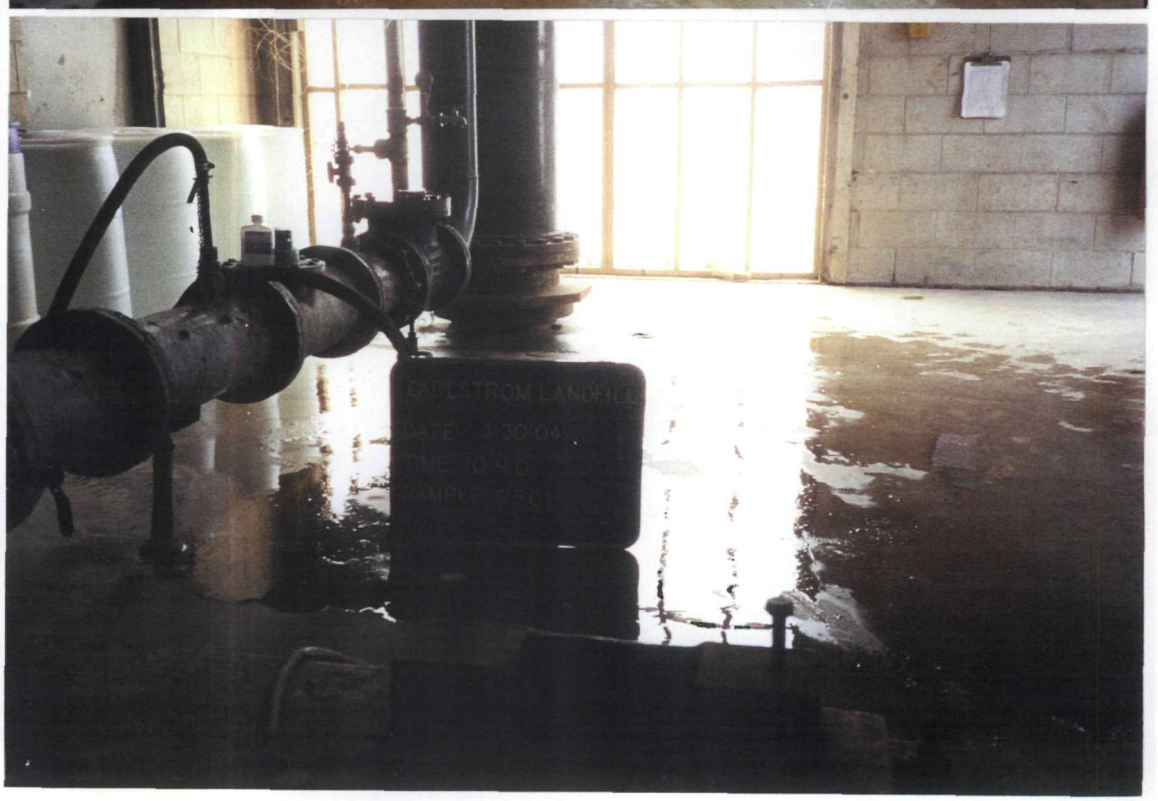
TIME: 10:40

PHOTOGRAPH TAKEN BY: R. CASPER

COMMENTS: Picture taken toward: West.

Photo Number 2.

Sample G501. The well is approxi-mately 1,565 feet deep.



Expanded Site Inspection Photos

DATE: 3/30/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 11:55	SITE NAME: Carlstrom Landfill

PHOTOGRAPH TAKEN BY: R. Casper

COMMENTS: Picture taken toward: North.

Photo Number 3.

Sample G203 was collected from a well located near Brandon locks.

DATE: 3/30/04

TIME: 11:55

PHOTOGRAPH TAKEN BY: R. CASPER

COMMENTS: Picture taken toward: East.

Photo Number 4.

Sample G203. The well pump is set at 675 feet, and is located approx-imately 3,000 feet southwest of site.

Expanded Site Inspection Photos

DATE: 3/30/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 13:00	SITE NAME: Carlstrom Landfill

PHOTOGRAPH TAKEN BY: R. Casper

COMMENTS: Picture taken toward: East.

Photo Number 5.

Samples X207/X208 are duplicate sediment samples collected from the I & M canal.

DATE: 3/30/04

TIME: 11:55

PHOTOGRAPH TAKEN BY: R. CASPER

COMMENTS: Picture taken toward: South.

Photo Number 6.

Samples X207/X208 were collected at a depth of 0 to 10 inches approximately 3,000 feet southwest of site.

Expanded Site Inspection Photos

DATE: 3/30/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 13:40	SITE NAME: Carlstrom Landfill

PHOTOGRAPH TAKEN BY: R. Casper

COMMENTS: Picture taken toward: East.

Photo Number 7.

Samples G201/G202 were collected from a private well located approximately 2,600' SW of site.

DATE: 3/30/04

TIME: 13:40

PHOTOGRAPH TAKEN BY: R. CASPER

COMMENTS: Picture taken toward: West.

Photo Number 8.

Sample G203. The well is reported to be only 31 feet deep and sometimes acts as an artesian well.

Expanded Site Inspection Photos

DATE: 3/30/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 14:30	SITE NAME: Carlstrom Landfill

PHOTOGRAPH TAKEN BY: R. Casper

COMMENTS: Picture taken toward: South.

Photo Number 9.

Sample G204 was collected from a private well located approximately 1,800' SW of site.

DATE: 3/30/04

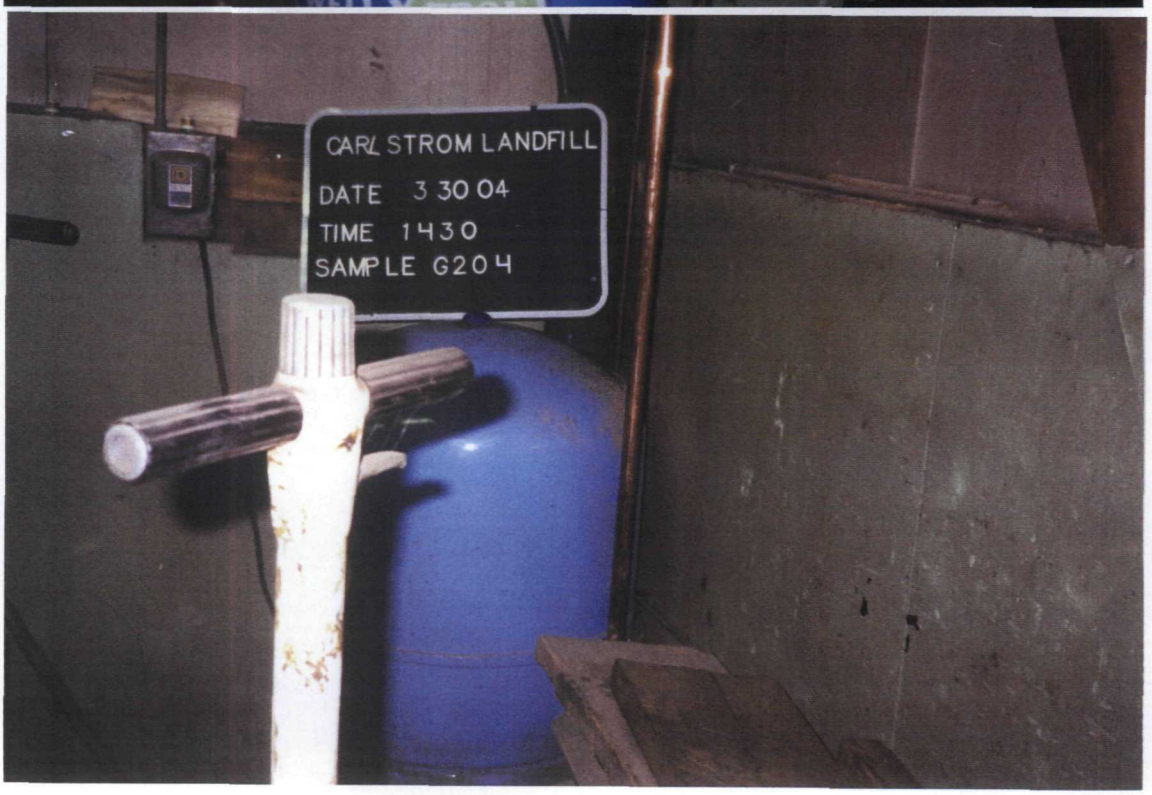
TIME: 14:30

PHOTOGRAPH TAKEN BY: R. CASPER

COMMENTS: Picture taken toward: East.

Photo Number 10.

Sample G204.The well pump is located inside a large metal building used for business.



Expanded Site Inspection Photos

DATE: 3/30/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 15:40	SITE NAME: Carlstrom Landfill

PHOTOGRAPH TAKEN BY: R. Casper

COMMENTS: Picture taken toward: North.

Photo Number 11.

Sample X209 was collected from the south side of the I & M canal at a depth of 0" to 12"

DATE: 3/30/04

TIME: 15:40

PHOTOGRAPH TAKEN BY: R. CASPER

COMMENTS: Picture taken toward: East.

Photo Number 12.

Sample X209. The sample was collected approximately 350 feet west of Brandon Road.

Expanded Site Inspection Photos

DATE: 3/31/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 7:50	SITE NAME: Carlstrom Landfill

PHOTOGRAPH TAKEN BY: R. Casper

COMMENTS: Picture taken toward: North.

Photo Number 13.

Sample X103 was collected near the southeast corner of an old metal building frame.

DATE: 3/31/04

TIME: 7:50

PHOTOGRAPH TAKEN BY: R. CASPER

COMMENTS: Picture taken toward: East.

Photo Number 14.

Sample X103. The sample was collected at a depth of 3" to 9".

Expanded Site Inspection Photos

DATE: 3/31/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 8:10	SITE NAME: Carlstrom Landfill

PHOTOGRAPH TAKEN BY: R. Casper

COMMENTS: Picture taken toward: North.

Photo Number 15.

Sample X104 was collected at the western portion of landfill near the base.

DATE: 3/31/04

TIME: 8:10

PHOTOGRAPH TAKEN BY: R. CASPER

COMMENTS: Picture taken toward: East.

Photo Number 16.

Sample X104. The sample was collected at a depth of 0" to 6" in a small ravine.

Expanded Site Inspection Photos

DATE: 3/31/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 8:50	SITE NAME: Carlstrom Landfill

PHOTOGRAPH TAKEN BY: R. Casper

COMMENTS: Picture taken toward: North.

Photo Number 17.

Sample X105 was collected at the northern portion of the landfill near the base.

DATE: 3/31/04

TIME: 8:50

PHOTOGRAPH TAKEN BY: R. CASPER

COMMENTS: Picture taken toward: West.

Photo Number 18.

Sample X105. The sample was collected at a depth of 3" to 4" in a small ravine.

Expanded Site Inspection Photos

DATE: 3/31/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 9:15	SITE NAME: Carlstrom Landfill

PHOTOGRAPH TAKEN BY: R. Casper

COMMENTS: Picture taken toward: North.

Photo Number 19.

Sample X106 was collected at the northern portion of the landfill near the I-80 ramp.

DATE: 3/31/04

TIME: 9:15

PHOTOGRAPH TAKEN BY: R. CASPER

COMMENTS: Picture taken toward: South.

Photo Number 20.

Sample X106. The sample was collected at a depth of 1" to 3".

Expanded Site Inspection Photos

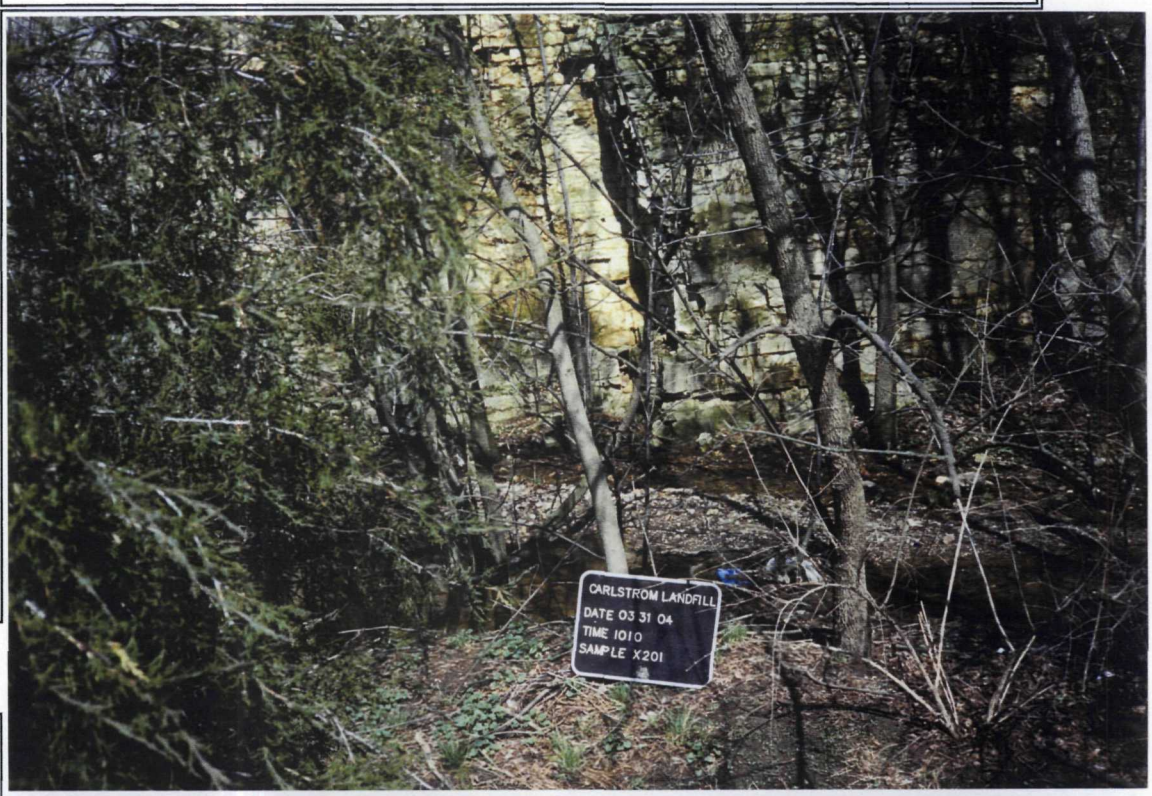
DATE: 3/31/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 10:10	SITE NAME: Carlstrom Landfill

PHOTOGRAPH TAKEN BY: R. Casper

COMMENTS: Picture taken toward: North.

Photo Number 21.

Sample X201 was collected at the north side. Part of quarry rock face is in background.



DATE: 3/31/04

TIME: 10:10

PHOTOGRAPH TAKEN BY: R. CASPER

COMMENTS: Picture taken toward: East.

Photo Number 22.

Sample X201. The runoff from the I-80 access ramp flows around a portion of the landfill.

Expanded Site Inspection Photos

DATE: 3/31/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 10:15	SITE NAME: Carlstrom Landfill

PHOTOGRAPH TAKEN BY: R. Casper

COMMENTS: Picture taken toward: North.

Photo Number 23. Sample X107 was collected near sediment background sample X201. Rock face in background.

DATE: 3/31/04

TIME: 10:15

PHOTOGRAPH TAKEN BY: R. CASPER

COMMENTS: Picture taken toward: West.

Photo Number 24. Sample X107. The rock face is at the right. A part of the broken I-80 drainage pipe is visible at bottom.

Expanded Site Inspection Photos

DATE: 3/31/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 10:25	SITE NAME: Carlstrom Landfill

PHOTOGRAPH TAKEN BY: R. Casper

COMMENTS: Picture taken toward: West.

Photo Number 25.

Sample X108 was collected on the north side approximately 300 feet east of X107.

DATE: 3/31/04

TIME: 10:25

PHOTOGRAPH TAKEN BY: R. CASPER

COMMENTS: Picture taken toward: East.

Photo Number 26.

Sample X108. The house in the background below the sign uses a private well for drinking.

Expanded Site Inspection Photos

DATE: 3/31/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 10:35	SITE NAME: Carlstrom Landfill

PHOTOGRAPH TAKEN BY: R. Casper

COMMENTS: Picture taken toward: North.

Photo Number 27.

Sample X109 was collected on the east side. The ditch at right drains I-80 ramp.

DATE: 3/31/04

TIME: 10:35

PHOTOGRAPH TAKEN BY: R. CASPER

COMMENTS: Picture taken toward: West.

Photo Number 28.

Sample X109. The sample consisted of a black silty clay.

Expanded Site Inspection Photos

DATE: 3/31/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 11:20	SITE NAME: Carlstrom Landfill

PHOTOGRAPH TAKEN BY: R. Casper

COMMENTS: Picture taken toward: South.

Photo Number 29.

Sample X110. Route 6 and the Des Plaines River can be seen in the background.

DATE: 3/31/04

TIME: 11:20

PHOTOGRAPH TAKEN BY: R. CASPER

COMMENTS: Picture taken toward: North.

Photo Number 30.

Sample X110. The sample was collected at the south side of the landfill.

Expanded Site Inspection Photos

DATE: 3/31/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 11:35	SITE NAME: Carlstrom Landfill

PHOTOGRAPH TAKEN BY: R. Casper

COMMENTS: Picture taken toward: North.

Photo Number 31.

Sample X202 was collected at the south side where drainage from the site collects.

DATE: 3/31/04

TIME: 11:35

PHOTOGRAPH TAKEN BY: R. CASPER

COMMENTS: Picture taken toward: South.

Photo Number 32.

Sample X202. The drainage flows across the road into a ditch along the north side of railroad tracks.

Expanded Site Inspection Photos

DATE: 3/31/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 11:50	SITE NAME: Carlstrom Landfill

PHOTOGRAPH TAKEN BY: R. Casper

COMMENTS: Picture taken toward: North.

Photo Number 33.

Sample X203 was collected across the road from the landfill.

DATE: 3/31/04

TIME: 11:50

PHOTOGRAPH TAKEN BY: R. CASPER

COMMENTS: Picture taken toward: West.

Photo Number 34.

Sample X203. The drainage flows west and eventual-ly enters into the I & M canal.

Expanded Site Inspection Photos

DATE: 3/31/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 12:40	SITE NAME: Carlstrom Landfill

PHOTOGRAPH TAKEN BY: R. Casper

COMMENTS: Picture taken toward: North.

Photo Number 35.

Sample X204 was collected in the ditch along the railroad tracks west of the site.

DATE: 3/31/04

TIME: 12:40

PHOTOGRAPH TAKEN BY: R. CASPER

COMMENTS: Picture taken toward: West.

Photo Number 36.

Sample X204. The sample was obtained below the gravel. The water soaks into the gravel in some areas.

Expanded Site Inspection Photos

DATE: 3/31/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 13:55	SITE NAME: Carlstrom Landfill
PHOTOGRAPH TAKEN BY: R. Casper	
COMMENTS: Picture taken toward: West.	
Photo Number 37.	
Sample X205. The	
ditch drains into	
Thorne Creek along	
Brandon Road, lo-	
cated at top.	

DATE: 3/31/04	
TIME: 13:55	
PHOTOGRAPH TAKEN BY: R. CASPER	
COMMENTS: Picture taken toward: East.	
Photo Number 38.	
Sample X205. The	
site is located	
approximately	
3,000 feet away.	

Expanded Site Inspection Photos

DATE: 3/31/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 14:15	SITE NAME: Carlstrom Landfill

PHOTOGRAPH TAKEN BY: R. Casper

COMMENTS: Picture taken toward: North.

Photo Number 39.

Sample X101/X102.

Background samples collected at Rock-dale Village Park, ~3,000 feet west.

DATE: 3/31/04

TIME: 14:15

PHOTOGRAPH TAKEN BY: R. CASPER

COMMENTS: Picture taken toward: South.

Photo Number 40.

Sample X101/X102.

These are duplicate samples collected from a black loam.

Expanded Site Inspection Photos

DATE: 3/31/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 14:45	SITE NAME: Carlstrom Landfill

PHOTOGRAPH TAKEN BY: R. Casper

COMMENTS: Picture taken toward: East.

Photo Number 41.

Sample X206 was collected from the I & M Canal. The lock at top enters the Des Plaines R.

DATE: 3/31/04

TIME: 14:45

PHOTOGRAPH TAKEN BY: R. CASPER

COMMENTS: Picture taken toward: North.

Photo Number 42.

Sample X206. The canal goes under the Route 6 bridge and continues west.

Expanded Site Inspection Photos

DATE: 5/4/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 10:50	SITE NAME: Carlstrom Landfill

PHOTOGRAPH TAKEN BY: R. Casper

COMMENTS: Picture taken toward: South.

Photo Number 43.

Sample G205 was collected from a private residential well located 300 feet east of site.

DATE: 5/4//04

TIME: 10:50

PHOTOGRAPH TAKEN BY: R. CASPER

COMMENTS: Picture taken toward: East.

Photo Number 44.

Sample G205.

Interstate 80 is located approxi-mately 100 feet beyond the trees in the background.

Expanded Site Inspection Photos

DATE: 5/4/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 14:10	SITE NAME: Carlstrom Landfill

PHOTOGRAPH TAKEN BY: R. Casper

COMMENTS: Picture taken toward: East.

Photo Number 45.

Sample G103 was collected from a 115 feet deep monitoring well near location G205.

DATE: 5/4//04

TIME: 14:10

PHOTOGRAPH TAKEN BY: R. CASPER

COMMENTS: Picture taken toward: South.

Photo Number 46.

Sample G103. The landfill is aproxi-mately 200 feet to the right. Well G104 is visible behind photo board.

Expanded Site Inspection Photos

DATE: 5/4/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 14:45	SITE NAME: Carlstrom Landfill

PHOTOGRAPH TAKEN BY: R. Casper

COMMENTS: Picture taken toward: West.

Photo Number 47.

Sample G104 was collected from a 65 feet deep monitoring well near G103.

DATE: 5/4//04

TIME: 14:45

PHOTOGRAPH TAKEN BY: R. CASPER

COMMENTS: Picture taken toward: North.

Photo Number 48.

Sample G104. The well is one of a cluster two monitoring wells constructed in 1989.

Expanded Site Inspection Photos

DATE: 5/4/04	SITE ILD#: 980497721 COUNTY: Will
TIME: 18:00	SITE NAME: Carlstrom Landfill

PHOTOGRAPH TAKEN BY: R. Casper

COMMENTS: Picture taken toward: North.

Photo Number 49.

Sample G101 was collected from an onsite monitoring well located at the north side of site.

DATE: 5/4//04

TIME: 18:00

PHOTOGRAPH TAKEN BY: R. CASPER

COMMENTS: Picture taken toward: West.

Photo Number 50.

Sample G101. The well is approxi-mately 101.5 feet deep and was originally used as a background well.

APPENDIX E

ANALYTICAL RESULTS (Volume 2)

CARLSTROM LANDFILL